

## REMARKS

The Office Action mailed on October 31, 2008 has been carefully considered. Accordingly, the changes presented herewith, taken with the following remarks, are believed sufficient to place the present application in condition for allowance. Reconsideration is respectfully requested.

Claims 216, 219-234, 236, 238-244, 246, 249-255, 257-263, and 265-272 are currently pending. Claims 234, 267-268, 271-272 have been cancelled without prejudice, at least some of the limitations of claim 234 having been incorporated into claim 216. Applicants reserve the right to prosecute claims 234, 267-268, 271-272 at a later time.

New claims 273-277 are respectfully submitted for consideration by the Examiner. No new matter has been introduced by the addition of claims 273-277. New claim 273 is supported by at least paragraph [0028] of the specification as published in U.S. Patent Application Number 2004/0156014 (“’014 publication”). New claim 274 is supported by at least paragraph [0130] and the table after paragraph [0132] of ‘014 publication. New claim 275 is supported by at least paragraph [0050] of ‘014 publication. New claim 276 is supported by at least the table after paragraph [0132] of ‘014 publication. New claim 277 is supported by at least paragraph [0061] of ‘014 publication.

### **Claims 216, 219-220, 222, 225-228, 233, 236, 238-244, 246, 250, 253-255, 257-263, 265-266, and 269-270 Are Patentable Over Kosoburd.**

Claims 216, 219-220, 222, 225-228, 233, 236, 238-244, 246, 250, 253-255, 257-263, 265-266, and 269-270 stand rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,760,871 (“Kosoburd”). Applicants traverse the rejection for the following reasons.

Kosoburd does not disclose all the elements of independent claim 216. For example, Kosoburd does not disclose an intraocular lens having a negative spherical aberration. To the contrary, Kosoburd discloses a lens having an aspheric surface operative to compensate for optical aberrations, which are typical of spherical surfaces, especially near the edge of the lens. *Kosoburd, column 16, lines 18-23*. A typical lens with spherical surfaces would cause spherical aberrations, especially at the edge of such a lens – as suggested by Kosoburd. By referring to such spherical surfaces in reference to “the lens”, Kosoburd makes clear that it is a self-correcting lens that is being disclosed. Thus, rather than disclosing a lens having a negative spherical aberration,

as required by claim 216, Kosoburd instead discloses a lens structured to compensate for optical aberrations of the lens itself.

Regarding lens structure, Kosoburd also describes a lens having a curvature according to an equation (10) for calculating a distance from the center of the lens that depends on the curvature of the lens at its center and on aspheric parameters “k” and “b<sub>n</sub>”. *Kosoburd, column 16, lines 33-39*. However, Kosoburd does not provide specific parameter values for Equation (10). Thus, Kosoburd is here silent regarding a lens structure having a negative spherical aberration, as required by claim 216. Additionally, Kosoburd also discloses a lens with posterior aspheric surface that is shaped in accordance with the aspheric surface of the human cornea. *Kosoburd, column 16, lines 23-26*. However, Kosoburd does not here disclose any specific lens shape, much less a lens shape having a negative spherical aberration, as required by claim 216.

Furthermore, Kosoburd does not disclose an intraocular lens comprising a surface having a shape configured to reduce a positive spherical aberration of a wavefront passing through the lens, as additionally required by claim 216. Rather, as described above, Kosoburd discloses a lens that compensates for optical aberrations of the lens itself. *Kosoburd, column 16, lines 18-23*. Thus, rather than disclosing a shape configured to reduce a positive spherical aberration of a wavefront passing through the lens, Kosoburd merely discloses a lens configured to compensate for optical aberrations of the lens itself. Kosoburd does not even suggest that such a compensated lens would reduce aberrations external to the lens, and certainly does not disclose or suggest reducing a positive spherical aberration of a wavefront passing through the lens, as required by claim 216.

In addition, at least for reasons similar to those discussed above, Kosoburd does not disclose all the elements of independent claim 244. For example, Kosoburd does not disclose an intraocular lens with a surface having an 11th term of a fourth order with a Zernike coefficient that is negative. Furthermore, Kosoburd does not disclose an intraocular lens configured such that the intraocular lens reduces a positive rotationally symmetric fourth order Zernike term of a Zernike polynomial of a wavefront.

The Office Action asserts that the limitations regarding the Zernike polynomials and the lens being characterized by conical equations are inherently met because the Zernike polynomials describe spherical aberrations which are reduced and Figure 4C shows a partially conical shape which may be described by such equations. It is unclear which specific limitations of the pending

claims that the Office Action is asserting are inherently disclosed in Kosoburd. Applicants request the Examiner be more specific in what is being asserted and also that he provide a basis in fact and/or technical reasoning to reasonably support the determination that such allegedly inherent characteristics necessarily flow from the teaching of the applied prior art, as required by MPEP 2112, section IV.

In an effort to respond to the best of our understanding, and without limiting the Examiner's obligation to support his inherency assertions and to provide clarity in his rejection, we offer the following.

Regarding FIG. 4C of Kosoburd, Applicants respectfully disagree with the apparent assertion that it necessarily shows a partially conical shape, much less a shape that inherently meets the limitations of claims 216 and/or 244. First, Kosoburd does not indicate that the drawing in FIG. 4C is to scale. In addition, regarding surfaces 22, 26 shown in FIG. 4C, Kosoburd does not specifically disclose that these surfaces, as shown in FIG. 4C, are "partially conical shape." However, even if surfaces 22 or 26 shown in FIG. 4C were a "partially conical shape", Kosoburd still does not disclose, or even suggest, that the surface shapes shown in FIG. 4C, or anywhere else in Kosoburd, are configured to reduce any aberrations or Zernike terms of a wavefront passing through the lens. More specifically, Kosoburd does not disclose, or even suggest, a lens having a shape configured to reduce a positive spherical aberration (as in claim 216) or a lens configured to reduce a rotationally symmetric fourth order Zernike term of a wavefront passing through the lens (as in claim 244).

Regarding the assertion that Zernike polynomials describe spherical aberrations which may be reduced, Applicants assert that even if a Zernike polynomials were usable to describe spherical aberrations of a wavefront that may be reduced, it does not follow that the Zernike polynomial terms or the aberrations they "describe" necessarily are reduced. Claim 216 specifically requires a surface having a shape configured to reduce a positive spherical aberration of a wavefront passing through the lens, while claim 244 specifically requires an intraocular lens that reduces a positive rotationally symmetric fourth order Zernike term of a Zernike polynomial of a wavefront. The assertions made by the Office Action on this point appear to miss the fact that Kosoburd does not disclose a lens that reduces either a positive spherical aberration of a wavefront or a positive rotationally symmetric fourth order Zernike term of a wavefront.

Kosoburd also does not disclose limitations of various claims depending from claims 216, 244. For example, Kosoburd does not disclose an intraocular lens designed to reduce wavefront aberrations of light passing into the eye when the intraocular lens has replaced a natural lens of an eye, as required by claim 228. As discussed above, Kosoburd discloses a lens that compensates for aberrations of the lens itself, but does not disclose reducing aberrations of a wavefront. *Kosoburd, column 16, lines 18-23*. More specifically, in the case of claim 228, Kosoburd does not disclose a lens configured to reduce wavefront aberrations of light passing into the eye. As is generally known in the art, and as specifically disclosed within the specification of the pending application, light passing into an eye passes through an aspheric cornea (e.g., see paragraphs [0048] – [0050] of the '014 publication and new claims 274-276). By contrast, the lens of *Kosoburd column 16, lines 18-23* compensates for optical aberrations which are typical of spherical surfaces. Thus, this section of Kosoburd cannot refer to reduction of wavefront aberrations of light passing into the eye, at least because the cornea is typically aspheric and this section of Kosoburd is directed to compensation of optical aberrations which are typically of spherical surfaces.

In addition, Kosoburd does not disclose light distribution between a base focus and an additional focus being 50%:50%, as required by claims 226 and 254. To the contrary, Kosoburd discloses a lens having a diffractive profile that produces three dominant diffraction orders operative to focus incident light in accordance with three different foci, the incident light energy being distributed substantially evenly among the three diffraction orders. *Kosoburd, column 8, lines 56-67*.

At least because Kosoburd does not disclose all of the limitations of claim 216 or 244, Applicant requests the Examiner allow claim 216 and 244. Claims 219-220, 222, 225-228, 233, 236, 238-243, 246, 250, 253-255, 257-263, 265-266, and 269-270 depend from claim 216 or 244 and further define the invention of claims 216 or 244. Thus, claims 219-220, 222, 225-228, 233, 236, 238-243, 246, 250, 253-255, 257-263, 265-266, and 269-270 are patentable over Kosoburd at least for the same reasons that claims 216 and 244 are patentable thereover, and are patentable in their own right as well.

Kosoburd also does not disclose limitations of various new claims currently submitted for consideration by the Examiner. For example, Kosoburd does not disclose an intraocular lens that

deviates sufficiently from being a spherical lens to compensate for corneal aberrations, as required in new claim 273. Nor does Kosoburd disclose an intraocular lens comprising a surface with a shape having an aspheric component configured to reduce a positive spherical aberration produced by an aspheric cornea having an aspheric corneal surface, as required by new claim 274 (see arguments above regarding claim 228). For example, wherein the corneal surface is characterized by an equation having a conic constant of the corneal surface, the conic constant having a value between -1 and 0, or of -0.26, as required by new claims 275 and 276, respectively. Similarly, Kosoburd does not disclose an intraocular lens wherein a Zernike coefficient of a lens surface is configured to balance a positive value of corresponding coefficient term of a Zernike polynomial that characterizes the cornea, as required by new claim 277.

**Claims 216, 219-225, 227-230, 233, 236, 238-244, 246, 249-253, 257, 259-263, 265-266, and 269-270 Are Patentable Over Lieberman.**

Claims 216, 219-225, 227-230, 233, 236, 238-244, 246, 249-253, 257, 259-263, 265-266, and 269-270 stand rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,800,532 ("Lieberman"). Applicants traverse the rejection for the following reasons.

At least for reasons discussed above in relation to Kosoburd, Lieberman also does not disclose all the elements of independent claim 216. For example, Lieberman does not disclose an intraocular lens having a negative spherical aberration. Nor does Lieberman disclose an intraocular lens comprising a surface having a shape configured to reduce a positive spherical aberration of a wavefront passing through the lens. Indeed Lieberman is silent regarding correction of aberrations of either an incident wavefront or even of the lens itself. Similarly, Lieberman is silent regarding lens structures suitable for reducing such aberrations.

In addition, at least for reasons discussed above in relation to Kosoburd, Lieberman does not disclose all the elements of independent claim 244. For example, Lieberman does not disclose an intraocular lens with a surface having an 11th term of a fourth order with a Zernike coefficient that is negative. Furthermore, Lieberman does not disclose an intraocular lens that is configured such that a positive Zernike term of a cornea, corresponding to the 11th term of the lens surface, is reduced for at least one of the foci of the intraocular lens. In addition, Lieberman clearly does not disclose an intraocular lens that reduces a positive rotationally symmetric fourth order Zernike term of said Zernike polynomial of the wavefront, as recited in claim 244. Indeed, the invention

of Lieberman directed to bifocal intraocular lenses in which a segment of relatively greater optical power is disposed along a peripheral portion in an asymmetric manner. Lieberman, column 1, lines 8-11.

Lieberman also does not disclose limitations of various claims depending from claims 216, 244. For example, Lieberman does not disclose an intraocular lens designed to reduce wavefront aberrations of light passing into the eye when the intraocular lens has replaced a natural lens of an eye, as required by claim 228. Indeed, the disclosure of Lieberman regarding aberrations is silent about reduction of aberrations of incident wavefronts, much less reduction of aberrations of light passing into an eye.

At least because Lieberman does not disclose all of the limitations of claim 216 or 244, Applicant requests the Examiner allow claim 216 and 244. Claims 219-225, 227-230, 233, 236, 238-243, 246, 249-253, 257, 259-263, 265-266, and 269-270 depend from claim 216 or 244 and further define the invention of claims 216 or 244. Thus, claims 219-225, 227-230, 233, 236, 238-243, 246, 249-253, 257, 259-263, 265-266, and 269-270 are patentable over Lieberman at least for the same reasons that claims 216 and 244 are patentable thereover, and are patentable in their own right as well.

Lieberman also does not disclose limitations of various new claims currently submitted for consideration by the Examiner. For example, Lieberman does not disclose an intraocular lens that deviates sufficiently from being a spherical lens to compensate for corneal aberrations, as required in new claim 273. Nor does Lieberman disclose an intraocular lens comprising a surface with a shape having an aspheric component configured to reduce a positive spherical aberration produced by an aspheric cornea having an aspheric corneal surface, as required by new claim 274, for example, wherein the corneal surface is characterized by an equation having a conic constant of the corneal surface, the conic constant having a value between -1 and 0, or of -0.26, as required by new claims 275 and 276, respectively. Similarly, Lieberman does not disclose an intraocular lens wherein a Zernike coefficient of a lens surface is configured to balance a positive value of corresponding coefficient term of a Zernike polynomial that characterizes the cornea, as required by new claim 277.

**Claims 231 and 232 Are Patentable Over Lieberman.**

Claims 231 and 232 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Lieberman. Applicants traverse the rejection for the following reasons. Claims 231 and 232 depend from claim 216 and incorporate all the limitations thereof. As discussed above, claim 216 is not anticipated by Lieberman and are thus patentable over Lieberman. Accordingly, claims 231 and 232 patent Lieberman at least for the same reasons that claim 216 is patentable over Lieberman, and are patentable in their own right as well.

**Claims 221, 223-224, 229-232, 249, and 251-252 Are Patentable Over Kosoburd.**

Claims 221, 223-224, 229-232, 249, and 251-252 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kosoburd. Applicants traverse the rejection for the following reasons. Claims 221, 223-224, 229-232, 249, and 251-252 depend from claims 216 or 244 and incorporate all the limitations thereof. As discussed above, claim 216 and 244 are not anticipated by Kosoburd and are thus patentable over Kosoburd. Accordingly, claims 221, 223-224, 229-232, 249, and 251-252 patent Kosoburd at least for the same reasons that claim 216 and 244 are patentable over Kosoburd, and are patentable in their own right as well.

**All Pending Claims Fully Comply with 35 U.S.C. § 112, Second Paragraph**

Claims 266-268 and 270-272 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants traverse this rejection; however, in order to advance the current application, claims 267-268 and 271-272 have been cancelled and claims 266 and 270 have been amended to remove references to an average cornea.

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Applicant: Piers et al.

### CONCLUSION

For the foregoing reasons, Applicants respectfully assert that the claims now pending are allowable over the prior art of record. Therefore, Applicants earnestly seek a notice of allowance and prompt issuance of this application.

The Commissioner is hereby authorized to charge payment of any fees associated with this communication to Deposit Account No. 502317.

Respectfully submitted,  
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